DOCUMENT RESUME

ED 229 442 TM 830 347

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TITLE Working in Classrooms: Learning in Science Project.
PUB DATE Sep 81
NOTE 11p.
PUB TYPE Reference Materials - General (130) -- Reports - Descriptive (141)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Adolescents; Basic Vocabulary; Classroom Environment; *Classroom Observation Techniques; *Classroom Research; Cognitive Style; *Data Collection; Foreign Countries; Interviews; Learning Experience; Preadolescents; *Research Methodology; *Science Education; *Science Projects
IDENTIFIERS New Zealand

ABSTRACT

This paper offers practical procedures and suggestions on initiating and carrying out naturalistic classroom observation of the type used in the Learning in Science Project in New Zealand (1980). The initiation of the research requires sensitivity and patience. Once in the classroom the overriding aim is to be unobtrusive and to achieve acceptance by pupils at an almost adult-to-adult level. To relate easily to other people at their level, whether they be principal or pupil, to be sensitive to people's actions and reactions, to be able to ask the question in a way which encourages a suitable response, to be able to make the right comment at the right time, and to know when to be jocular and when to be serious must inevitably depend to a large extent on the researcher's personality. The relevance and usefulness of the practical suggestions must therefore depend on the researcher. The authors maintain the view that if science education research is to develop, then researchers must be found in classrooms confronting the real world of the learner. (Author/PN)

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LEARNING IN SCIENCE PROJECT

WORKING IN CLASSROOMS

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WORKING PAPER

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WORKING IN CLASSROOMS -

A Checklist for the Participant Observer

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September, 1981

INTRODUCTION

The Learning in Science Project (see Tasker et. al., 1980) studied in some depth the problems and difficulties of learning science at the 10-14 year old level in New Zealand. In the in-depth phase of that Project, two complementary research foci concentrated on children's science[1] and the influence of science classroom experiences on the learner. One focus mainly involved interviewing children to establish the various meanings held for words used in science (Osborne and Gilbert, 1980a) and to identify children's views of various phenomena (Osborne, 1980). The other focus involved the observation and portrayal of typical science lessons (Tasker and Osborne, 1980). Here the aim was to establish how, and in what way, classroom learning experiences encourage children to change or modify their cognitive structures (Tasker, 1981). These two aspects of the in-depth phase supported each other:

i) in the mechanics of data collection;

ii) in that the interview work sensitised the researchers to the likely views held by children in classrooms; and

iii) in that the classroom observations helped identify aspects of children's science (Osborne, 1980) which were further explored in structured interviews (Osborne and Gilbert, 1980b).

The aim of all this work was to provide insights into the world of the science learner and in so doing provide an alternative perspective of the science classroom to that currently held by teachers and others (Osborne, 1981).

This paper, and a second paper (Bell and Osborne, 1981), are concerned with giving practical suggestions to those people who wish to use the type of data collection procedures used in the Learning in Science Project. The suggested do's and don'ts of structured interviews (Bell and Osborne, 1981) and the do's and don'ts of classroom observation (this paper) are based on our experiences in the Project.

[1] Children's science involves children's meanings for words used in science and children's views about things and about how and why they behave as they do.

ESTABLISHING CONTACT WITH THE CLASSROOM TEACHER

Most schools and teachers are naturally, and quite rightly, cautious about allowing researchers open access to their classrooms. The nature of the research, the personality of the researcher, and the outcomes of the research all need to be considered by the schools' personnel. Such considerations take time and cannot be rushed. It is most important that the school is both in sympathy with the research objectives and confident in the researcher's professionalism. Most, or all, of the following steps need to be undertaken.

i) It is first necessary to gain official approval (from the school's controlling authority) for the research that is to be undertaken. However, in obtaining this approval it is desirable that agreement be reached that during the Project the researchers may henceforth approach schools directly as and when required.

ii) Once official channels have been cleared, our normal procedure is to write to the school principal outlining the Project and stating that we will ring the school during the next week to arrange to meet the Principal, and possibly the person responsible for science, to discuss the Project in detail. (We find it useful to have a small pamphlet containing information about the purpose of the work, the type of research to be undertaken, and the research personnel involved. We include the pamphlet with the letter).

iii) We then visit the school, meet the Principal and, in most cases, the person responsible for science. During this meeting the nature of the proposed work is discussed and freedom is negotiated to work directly in future with a nominated teacher, (e.g. head of science, syndicate leader, classroom teacher). Contact with this person is established before leaving the school and a second visit arranged.

iv) The second visit to the school enables the researcher to talk in more detail to the nominated teacher about the research and to meet informally with other teachers who may become involved in the research. A third visit is arranged to speak to the participating teachers as a group.

v) The third visit to the school enables the proposed research to be presented to the classroom teachers who are likely to participate in the programme. Discussion over coffee allows teachers to bring forward their individual concerns with the researcher, and enables arrangements to be made to meet individual teachers for recorded discussion on problems and difficulties of the teaching and learning of science.

vi) A series of visits to the school then permits interview/talks/discussion with individual classroom teachers. Often at this point we negotiate to work with some individual pupils outside the classroom, e.g. interviews on pupils' views (see Bell and Osborne, 1981).

vi) In subsequent visits we then enter the classroom to meet and collect pupils for interviews. Returning to the classroom after completion of the interviews enables the researcher to show an interest in what the class is doing. This gives the teacher the opportunity to suggest a classroom visit. The researcher then negotiates the participant observer role (Tasker and Osborne, 1980) and the use of any data collected.

Note:

Depending on the teacher it was sometimes best to make the first classroom visit a low key one, e.g. without the use of a tape-recorder.

In our view, throughout the period leading up to classroom access, the researcher must be extremely sensitive to the feelings of the classroom teacher. Sometimes it is possible to shortcut the above procedures, while on the other hand, at other times it will be necessary to repeat less sensitive activities until the teacher is confident enough to be approached about working inside the classroom. It is important to be as open as possible with the teacher and, in terms of what happens in the classroom and with the data collected, ensure that the teacher feels in control. If the situation is one of an exchange of gifts - the teacher giving the researcher the opportunity to work in a classroom and the researcher feeding back what he can about what is observed - without jeopardising his or her research - then, in our experience, teacher support is very strong.

The importance of staying behind after a visit to the school to have a cup of coffee or to have lunch in the staff-room with teachers, cannot be underestimated. These occasions provide unique opportunities for concerns and issues to be raised and discussed.

COLLECTING INFORMATION IN CLASSROOMS

In the work we have been involved in (Tasker and Osborne, 1981; Tasker, 1981) our concern has been to focus on what the learner is thinking and doing with as little perturbation of the situation, because of our presence, as possible. In this work we have found it is best to:

i) Dress informally avoiding colours and styles likely to draw attention. If by dress, and mannerism, the researcher cannot be assumed by pupils to be an inspector or visiting teacher all the better.

ii) Start the lesson with the class. The settling in period provides the ideal opportunity to enter the class and to locate oneself within it without drawing much attention.

iii) As far as possible, assume the status of a pupil. This can be done in a variety of ways. We prefer the teacher not to introduce us. If we feel the need to introduce ourselves to an individual pupil, we will use our first name only. We tend to sit in the body of the class often asking pupils where there is a spare seat. We seek pupil permission to associate with them while they work or to talk to them about their work. In working with pupils we always refer to the teacher formally.

The following is an example of successful integration of a researcher into a class. In this case the pupil directly in front of the researcher was curious about why the researcher was there.

P. "Hello."

R. "Hello."

P. "Are you a checker?" (Inspector)

R. "No."

P. "Are you a student teacher?" (Teacher trainee)

R. "No."

P. "Why are you here?"

R. "Oh, I just want to learn about science and Mr _____ (teacher) said I could come today."

P. "Oh ... then you better come up and sit by me."

iv) Avoid public interaction with the teacher. To be seen talking informally and quietly to the teacher identifies the researcher as "one of them" as far as the pupils are concerned. If interaction is unavoidable then it should be done openly so that pupils can hear.

v) Put any observation instruments, e.g. tape recorder or notebook, on the table from the beginning but handle them in a matter-of-fact way. Keep note taking to a minimum. If an audio recorder is being used, it should be small, portable and encased. We have found it best to use the recorder freely but to ensure that it is never the focus of attention. We would switch it on at the beginning and then ignore it as far as possible. Switching it on and off or changing cassettes draws unacceptable attention to the device. When asked by pupils "why have you got a tape recorder?" we

have found the best response to be based on the notion of being here to learn about science and not wanting to miss anything. This is readily accepted in our experience, perhaps because it complements the kinds of questions we ask.

vi) As far as possible the researcher needs to fit his or her movements and actions to the stream of class behaviour and conform to teacher directions (that might mean sitting down when the class is asked to do so).

vii) Be interested but unobtrusive in pupil actions. Don't question pupils too soon. Our experience has been that too early an intervention can influence subsequent behaviour. When talking with pupils the researcher needs to use the pupils' own idiom as far as possible.

viii) When questions are asked they need to be framed in a way to elicit the views of the pupil. Teachers almost unconsciously ask questions in a particular way to establish whether or not pupils hold specific views and then to lead them to a new view. It is very easy for a researcher who has been a teacher to stay within or revert to this style of questioning. Alternatively, if a pupil asks a question which would normally be directed at the teacher, do not answer it but rather imply that that is a question for the teacher to answer! You as the researcher are just there to find out about learning, about what pupils are doing and thinking.

The following is an example of the researcher investigating children's ideas.

R. "What's happening when the crystal dissolves?"

P1. "Dissolves and keeps going."

R. "Is the crystal still there?"

P2. "Yep."

P3. "Yeah - just though."

R. "Just though?"

P4. "Yeah ... the colour's come out of it."

R. "The colour has come out of it?"

P4. "Yeah ... dissolved out of it."

Here is an example of a researcher finding out about what children are doing.

R. "How did you find all these (features)?"

P. "Some of them, I looked up the back at the index and the others I just looked at the countries."

R. "What did you do first? Look in the index or at ...?"

P. "At the pages."

R. "Is that quicker or what?"

P. "Yeah, that's quicker - a lot quicker than using the index."

R. "What's hard about using the index?"

P. "I don't understand the North and the West."

A final example is one where the researcher has reverted to being a teacher. The teacher in researcher's clothing would be obvious albeit subconsciously, to the pupil. Such interviews must be avoided. For example;[2]

R. "Which is the part you don't understand? This?"

P. "Yeah, these amounts are different in the test tubes."

R. "So what does the whole sentence say? From here?"

P. "The amounts in the test tube all weigh the same but the amounts are different in the test tubes."

R. "What do you mean by amounts?" (Silence)

[The researcher now begins the slide into teaching]

R. "How much ironsand did you need [to weigh the specified amount?]"

P. "A little bit."

R. "Where did it come up to?"

[The researcher is now firmly committed to teaching what amount means]

P. "About there."

R. "All right now how far up did the sawdust come?"

P. "Right up to the top."

R. "What about the water?"

P. "The middle."

R. "Right, so the amounts are different ... the volumes are different."

Finally, many of the comments made by Bell and Osborne (1981) about the structured interview apply equally well to the informal interview in the classroom setting.

CONCLUSION

In this paper we have attempted to give practical hints on initiating and carrying out naturalistic classroom observation of the type used in the Learning in Science Project. In summary the initiation of the research requires sensitivity and patience. Once in the classroom the overriding aim

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[2] This is a modified transcript specifically designed to show the problem. From Working Paper No. 1, Reading and Learning in the Junior Secondary School Project.

is to be unobtrusive and to achieve acceptance by pupils at an almost adult-to-adult level. Naturally it has been difficult for us to be certain just how pupils have considered us, but our experience is that by adopting the above procedures we have been assigned a suitable role in the classroom - something like a potential adult student testing the subject out. At least the off-task comments and actions made in our presence suggest that pupils see no need to change their behaviour as a result of our presence.

On the other hand we would be naive in the extreme to assume that if researchers follow our instructions they will have no difficulties. To relate easily to other people at their level, whether they be principal or pupil, to be sensitive to people's actions and reactions, to be able to ask the question in a way which encourages a suitable response, to be able to make the right comment at the right time, and to know when to be jocular and when to be serious must inevitably depend to a large extent on the researcher's personality. The relevance and usefulness of our practical suggestions must therefore depend on the researcher.

Finally we would like to say how enjoyable and informative we have found the time we ourselves have spent in science classrooms. Moreover our experiences have more than ever led us to the view that if science education research is to develop, then researchers must be found in classrooms confronting the real world of the learner.

TABLE I: Do's and Don'ts of Classroom Observation

DO'S	DON'TS
Getting into the Classroom	
Clear official channels then negotiate to approach teachers directly in future.	Do not ignore the authority structure of the institution.
Discuss all aspects of the Project with the institution and be open to suggestions.	Do not be secretive about the research and your role in that research.
Visit the school on a number of occasions and gradually build up rapport with teachers.	Do not attempt to rush the approach to the school or the individual teacher.
Find something that enables you to work with individual teachers and pupils outside the classroom, before working inside the classroom.	Do not expect access to classrooms to be given before the teacher has had the opportunity to assess you and your likely reaction to being in the classroom.
Be extremely sensitive to the feelings of the classroom teacher.	Do not ignore any indication that the classroom teacher is apprehensive about some aspect of what you want to do as a researcher.
In the Classroom	
Dress informally	Do not dress in a way which will suggest that you are an authority figure.
Start the lesson with the class.	Do not arrive late (or on the wrong day!)
Assume the status of a pupil but treat pupils on an adult-to-adult level.	Do not in any way act as a teacher or interact with pupils on a teacher-to-pupil level.
Interact solely with the pupils.	Do not interact with the teacher in the presence of pupils.
Use observation instruments quite openly in a matter-of-fact way.	Do not turn the tape-recorder on and off or in any other way fiddle with the instrumentation during the lesson.
Fit in with the movements and actions of the class.	Do not be obtrusive, acting in a different manner to the pupils.
Interact with pupils at the minimum level necessary to obtain the required information.	Do not interact with pupils in a way which will alter the behaviour you wish to observe.
Use questions which elicit pupils' views, whatever those views might be.	Do not use teaching questions and hence assume a teaching role.

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